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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/134,333	08/14/98	LONGACRE-ANDRE S	0660-0135-0X

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EXAMINER	
TURNER, S	

ART UNIT	PAPER NUMBER
1644	11

DATE MAILED: 01/24/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/134,333	Longacre-andre
Examiner	**Group Art Unit**
Sharon L. Turner, Ph.D.	1644

☒ Responsive to communication(s) filed on 8-14-98

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-67 is/are pending in the applicat

Of the above, claim(s) 49-67 is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-48 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 7

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. The Group and/or Art Unit of U.S. Patent application SN 09/134,333 has changed. In order to expedite the correlation of papers with the application please direct all future correspondence to Technology Center 1600, Art Unit 1644.

Election/Restriction

2. Applicant's election with traverse of Group I, claims 1-48 in Paper No. 10 is acknowledged. The traversal is on the ground(s) that (1) the office has not provided adequate reasons and/or examples to support its conclusion of patentable distinctness or (2) demonstrated that the examiner will be seriously burdened by searching all the claims without restriction.

This is not found persuasive because with respect to point (1) above, the inventions are distinct as noted in the last Office Action, as shown by the distinctness described therein. Applicant's attention is directed to MPEP 806.05. With respect to point (2) above, contrary to applicants' assertion that any search of the prior art in regard to Groups I-V will reveal whether any prior art exists as to the other Groups, a search is directed to references which would render the invention obvious, as well as references directed to anticipation of the invention, and therefore requires a search of relevant literature in many different areas of subject matter. A coextensive search of the prior art for all of Groups I-V is thus considered burdensome since the search for any one Group is not coextensive with the search required for any other Group.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 49-63 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to non-elected inventions, the requirement having been traversed in Paper No. 10.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-48 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 and 43 of copending Application No. 09/125,031 and claims 1-14 and 37-38 of copending Application No. 09/125,032. Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the claims overlap, in particular the recombinant proteins of the surface protein 1 of the merozite form of a Plasmodium type parasite, oligomers, protein

fragments and vaccination compositions share structural and functional characteristics as recited in the claims of the '031, '032 and instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Specification

6. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-6, 8-11, 32-36 and 38-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite as "the surface" is repeated twice, applicant is requested to check for error.

Claims 1, 3, 6, 32, 34, and 36 are indefinite as the metes and bounds of "the corresponding Plasmodium" are unclear.

Claims 1-4, 6, 32-34, and 36 are unclear as the metes and bounds of "reducing medium", "reduced form", "conformational form", "non reduced state", "reduced non irreversible state", and "irreversibly reduced" are unclear.

Claims 3, 9, 11, 34, and 39 are indefinite as the metes and bounds of "substantially free", "substantially specific" and "essentially free" are unclear.

Claims 5, 8, 35, and 38 are indefinite as the metes and bounds of "a pure state" and "a very high degree of purity" are unclear.

Claim 10 is indefinite because the claim refers to "the protein of claim 1" and "the same MSP-1 recombinant protein" in reference to claim 1 which recites "a recombinant protein"and "a 19 kilodalton (p19) C-terminal fragment of the surface protein 1 of the merozite form (MSP-1 protein)." It is unclear to which protein the applicant is referring to in claim 10.

9. Claims 33-37 recite "vaccinating compositions" in reference to claim 32 which recites "a vaccination composition." There is insufficient antecedent basis for this limitation in the claim. Claims 33-37 should refer to the vaccination composition of claim 32.

Priority

10. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C.120 as follows:

An application (PCT/FR97/00290) in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78).

11. Acknowledgment is made of applicant's claim for priority based on FR96/01822, an application filed internationally on 2-14-96. It is noted, however, that applicant has not filed a certified translation copy of the application as required by 35 U.S.C. 119(b) and 35 U.S.C. 365(c).

Claims 1-48 may not have the benefit under 35 USC 120 and 119(b) because the certified english translation copies of PCT/FR97/00290 and FR96/01822 have not been filed and the examiner can not determine the proper effective filing date of instant claims 1-48 with respect to the PCT/FR97/00290 and FR96/01822 documents from which priority is instantly claimed. Thus, the priority date awarded instant claims is the filing date, 8-14-98.

Claim Rejections - 35 USC § 102 or 103

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-11, 15-23, 27 and 29-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Shi et al, Infection and Immunity, July 1996, 64(7):2716-2723 as evidenced by Egan et al, Infection and Immunity, August 1997, 65(8):3024-3031.

Shi et al teach the recombinant protein of claim 1, see in particular the title, p. 2716, Natural Immune Response to the C-terminal 19 kDa Domain of Plasmodium falciparum Merozite Surface Protein 1. The protein is recombinant, being produced in yeast, see in particular abstract, line 3. The Plasmodium type parasite is Plasmodium falciparum which is other than P. vivax. The recombinant protein inherently comprises conformational epitopes which are unstable in a reducing medium because as the protein contains disulfide bonds which are hydrolyzed in reducing medium. The protein constitutes epitopes recognized by human antisera formed against plasmodium, see in particular abstract, lines 6-10, p. 2716. Thus the reference teachings anticipate claim 1. Shi et al teach the recombinant protein of claim 1 which thus inherently is not recognized by said human antisera when it is in the reduced form. The structural limitations recited in claims 3-4, 6-9, 23, 27 and 29-30, are drawn to inherent properties of the recombinant protein anticipated by Shi et al. The protein is in a pure state as it is recombinantly produced absent other contaminating Plasmodium proteins (claim 5). The Shi protein elicits a long term memory response, see in particular abstract, p. 2716. Claim 10 is an inherent property of the Shi et al protein because the p42 is the unprocessed precursor which shares in common epitopes of p19, see in particular Eagan et al, Figure 1, p. 3025. Claim 11 is anticipated by Shi et al because the p19 C-terminal fragment does not include the c-terminal

region of p33. Claims 15-23 are anticipated by Shi et al because the EGF domains are within the 19 kDa fragment, see in particular Shi et al, p. 2716, col. 2, lines 1-14. Claim 31 is anticipated as the proteins is the result of conjugation of yeast expression constructs. Claims 32-47 recite vaccination or vaccinating compositions which comprise the recombinant proteins as claimed in claims 1-11, 15-23 and 27. Thus as the vaccination or vaccinating compositions comprise the recombinant proteins of claims 1-11, 15-23 and 27 as set forth above, the reference teachings anticipate the recombinant proteins of claims 1-11, 15-23 and 27, and the vaccination or vaccinating compositions of claims 32-47.

14. Claims 1-23, 25, 27, and 29-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Eagan et al, Infection and Immunity, August 1997, 65(8):3024-3031.

Eagan et al teach the proteins and compositions of claims 1-23, 25, 27, and 29-48, see in particular figure 1, synthetic peptides P1-P9 corresponding to portions of the entire MSP-1 p19 sequence and recombinant antigens produced as fusion proteins with the glutathione S-transferase protein using pGEX vectors transformed in E. coli, see in particular Antigens, p. 3025, col. 1, line 33-col. 2, line 14 which comprise the p19 C-terminal fragment as claimed. In particular to claim 1, Well-19 and MAD20 comprise the entire p19 protein, P1-P9 comprise that portion of that fragment. The peptides P1-P9 share one amino acid of p19 (a portion of that fragment) and a single amino acid of the p33 fragment which contains less than 10 amino acid residues, (claim limitations of the proteins of claims 12-14) . The P7 peptide is that recited in claim 25, in particular is free of the GPI anchoring site. The proteins contain conformational

epitopes which are unstable in reducing medium and which constitute the majority of the epitopes recognized by human antisera formed against the corresponding Plasmodium; are not recognized by said human antisera when it is in the reduced form and are recognized by human antisera formed against the corresponding Plasmodium or against a homologous Plasmodium when it is in its non reduced state or in a reduced non irreversible state, but is not recognized or is only recognized to a slight extent by these same antisera when it is irreversibly reduced, see in particular Tables 1-5 and Figure 2. Thus, the proteins inherently contain the coordinates specified in claims 3- 4 and 7-8. The recombinant proteins are pure as they are recombinantly produced absent other Plasmodium proteins (claim 5). The P7 protein in particular is free of the sequence of amino acids in the hydrophobic C-terminal portion of the p19 which intervenes in the induction of an anchoring of said p19 to the cell membrane of a host infected with a Plasmodium type parasite. Claims 32-48 recite vaccination or vaccinating compositions which comprise the recombinant proteins as claimed in claims 1-23, 25 and 27. Thus, as the vaccination or vaccinating compositions comprise the recombinant proteins of claims 1-23, 25 and 27 as set forth above, the reference teachings anticipate the recombinant proteins of claims 1-23 and 27, and the vaccination or vaccinating compositions of claims 32-47.

15. Claims 1-11, 15-23, 28-46 and 48 are rejected under 35 U.S.C. 102(a) or (b) as being anticipated by Holm et al, Mol. & Biochem. Parasitol., 89:313-319, 1997.

Holm et al teach the recombinant protein of claim 1 comprising a portion or a peptide capable of inducing an immune response. The recombinant protein comprises epitopes which are recognized or not recognized when in the nonredued and reduced forms respectively, see Figure 1, thus inherently comprising the coordinates of the recombinant proteins. MSP-1p19 comprises the two EGF domains. Claim 28 is anticipated by Holm et al because the P. cynomolgi protein shares that of a portion of that fragment of claim 1 and that of a peptide of that fragment of claim 1 which are capable of inducing immune responses...as recited in claim 1, see in particular Figures 1-2 recognition by immune antisera. Claim 48 is anticipated by Holm et al because the P. vivax protein shares that of a portion of that fragment of claim 32 and that of a peptide of that fragment of claim 32 which are capable of inducing immune responses...as recited in claim 32, see in particular Figures 1-2 recognition by immune antisera. Thus, the reference teachings anticipate the claimed recombinant proteins and vaccine or vacinating compositions as claimed.

16. Claims 1-26, 29-46 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Longacre et al, Mol. Biochem.& Parasitol., 64:191-205, 1994.

Longacre et al anticipates instant claims because the recombinant proteins of Longacre et al are that of a portion of that fragment and that of a peptide of claim 1 as recited in claim 1 which are capable of inducing an immune response, see in particular Figures 4 and 6-8. Thus, the proteins inherently comprise the coordinates specified in claims 3-4 and 7-8. The proteins are pure since they are recombinantly produced absent other Plasmodium proteins. The proteins are unstable in reducing medium and constitute the majority of the epitopes recognized by human

antisera formed against the corresponding Plasmodium. The proteins are also not recognized by said human antisera when it is in the reduced form and the proteins are recognized by human antisera formed against the corresponding Plasmodium or against a homologous Plasmodium when it is in its non reduced state or in a reduced non irreversible state, but is not recognized or is only recognized to a slight extent by these same antisera when it is irreversibly reduced, see in particular Figure 7. Claim 10 is anticipated because the p19 recombinants contain some but not all of the same epitopes (sequences) of the p42 molecule and will thus inhibit the reactivity of immune antiserum against the p42 (p19) produced from the same MSP-1 protein and is itself only partially inhibited by an immune antiserum produced against (full length) p42. Claims 12-14 are anticipated by the recombinant proteins of Longacre et al, see in particular p. 194, col. 2, lines 29-31. Claims 15-23 are anticipated by Longacre et al because the p19 molecule comprises the two EGF regions of the p19 protein. Claims 24-25 are anticipated as the recombinant proteins are produced as GPI moieties or when the anchor sequence is deleted, no cell surface expression occurs, see in particular, p. 197, col. 1, line 16 through p. 199. These recombinant proteins are hydrosoluble, see in particular experimentation p. 197, col. 1, line 16 through p. 199. This protein oligomer comprises 2 to 50 monomer units and is conjugated to a baculovirus expression vector, see in particular Construction of recombinant baculovirus, p. 192-193. Claims 32-46 recite vaccination or vaccinating compositions which comprise the recombinant proteins as claimed in claims 1-11, 15-23 and 27. Thus as the vaccination or vaccinating compositions comprise the recombinant proteins of claims 1-11, 15-23 and 27 as set forth above, the reference

teachings anticipate the recombinant proteins of claims 1-11, 15-23 and 27, and the vaccination or vaccinating compositions of claims 32-46 and 48, in particular the recombinant protein comprises the sequence of the p19 Plasmodium vivax.

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

18. Claims 1-48 are provisionally rejected under 35 U.S.C. 103(a) as being unpatentable over claims 1-19 and 43 of copending Application No. 09/125,031 and claims 1-14 and 37-38 of copending Application No. 09/125,032.

Claims 1-48 are drawn to recombinant proteins, oligomers, vaccinating and vaccination compositions. These products as claimed in claims 1-48 correspond to a recombinant protein...fragment of the surface protein 1 of the merozite form (MSP-1 protein) of a Plasmodium type parasite...against the corresponding Plasmodium. As such, these elements are shared, see in particular the '031 and '032 applications, claim 1, which are also drawn to recombinant proteins and vaccination compositions as claimed in claims 1-19 and 43 of copending Application No. 09/125,031 and claims 1-14 and 37-38 of copending Application No. 09/125,032 which correspond to a recombinant protein...fragment of the surface protein 1 of the merozite form (MSP-1 protein) of a Plasmodium type parasite...against the corresponding Plasmodium. Thus, the '031 and '032 applications teachings render obvious the instantly claimed invention.

19. Claims 1-48 are provisionally rejected under 35 U.S.C. 103(a) as being obvious over claims 1-19 and 43 of copending Application No. 09/125,031 and claims 1-14 and 37-38 of copending Application No. 09/125,032, which has common inventors, but different assignees with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e) if patented. This provisional rejection under 35 U.S.C. 103(a) is based upon a presumption of future patenting of the conflicting application. The instantly claimed invention is obvious over the '031 and '032 applications as set forth above, provisional rejection under 35 U.S.C. 103(a).

This provisional rejection might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by a showing of a date of invention for the instant application prior to the effective U.S. filing date of the copending application under 37 CFR 1.131.

Status of Claims

20. No claims are allowed.

21. Any inquiry of a general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for Group 1600 is (703) 308-4242.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon L. Turner, Ph.D. whose telephone number is (703) 308-0056. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan, can be reached at (703) 308-3973.

Sharon L. Turner, Ph.D.
January 18, 2000

CHRISTINA Y. CHAN
SUPERVISORY PATENT EXAMINER
GROUP 1800 1640